Odontogenic Infections

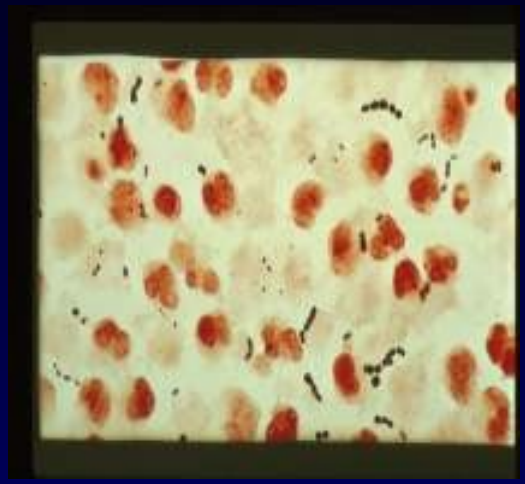
Odontogenic Infections

- One of the most difficult problems
- Range from low-grade to severe, life-threatening
- Most are easily managed with minor surgery and antibiotics

Odontogenic Infections

- Systematic approach to Infection Patient
  - Typical Microbiology
  - Natural history of odontogenic infections
  - Principles of infection management
  - Indications for referral to OMS

Microbiology

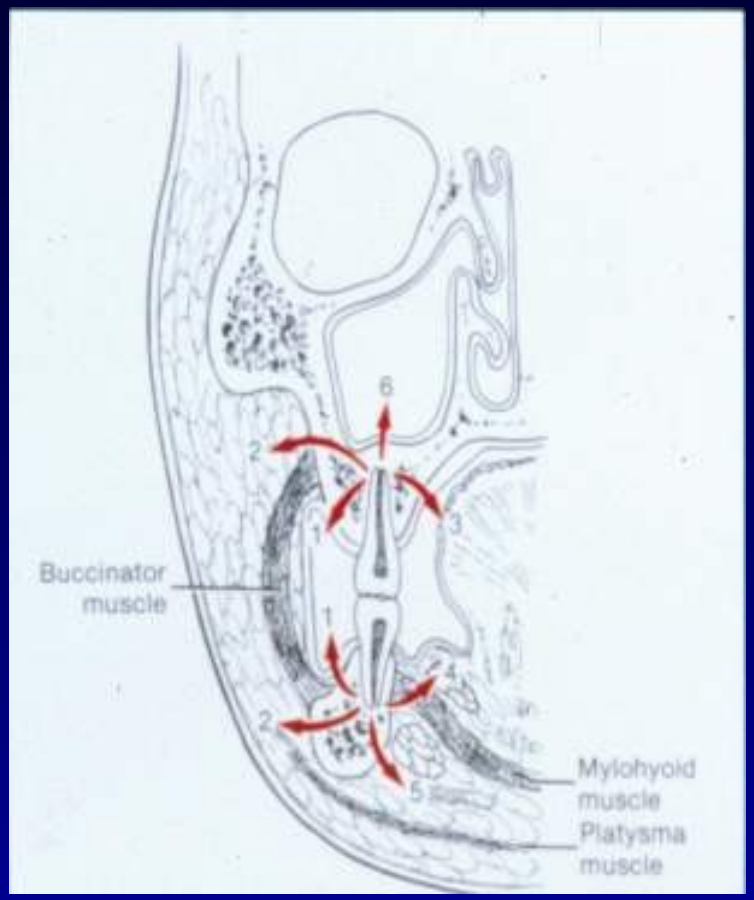


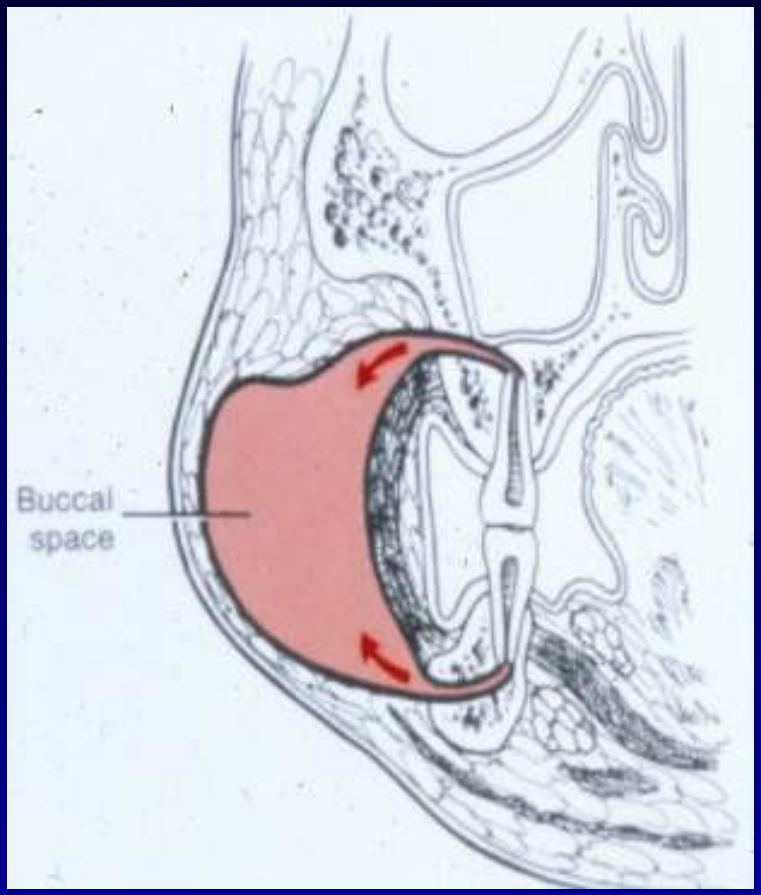
- Indigenous bacteria
  - Normal oral flora
- Polymicrobial
- Aerobic-anaerobic composition
  - Aerobic gram + cocci (Streptococci)
  - Anaerobic gram + cocci (Strep, Peptostrep, Pepto), gram + rods (Eubac, Lacto), and gram - rods (Porphromonas or Prevotella, Fusobacterium)

Progression of Odontogenic Infections

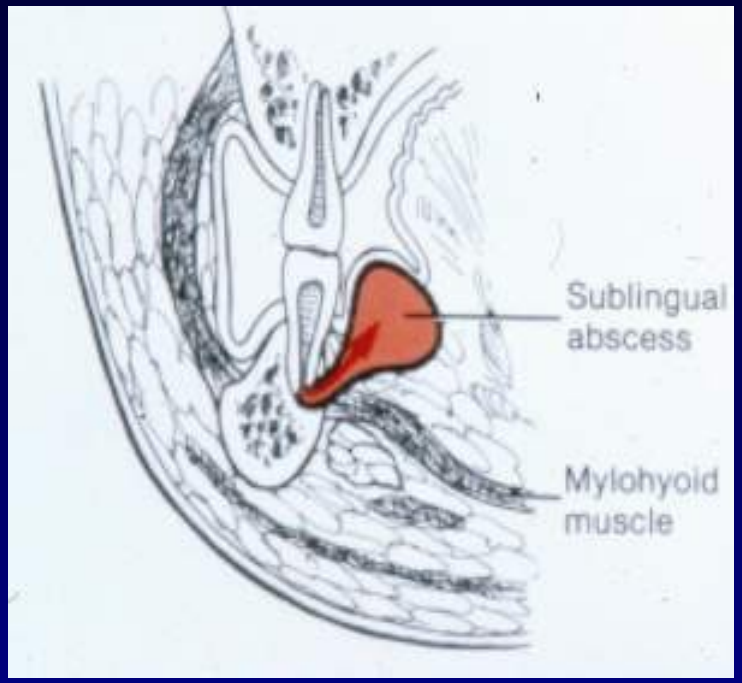
- Periapical
- Periodontal
- Soft tissue involvement
  - Determined by perforation of the cortical bone in relation to the muscle attachments
- Cellulitis- acute, painful, diffuse borders
- Abscess- chronic, localized pain, fluctuant, well circumscribed.

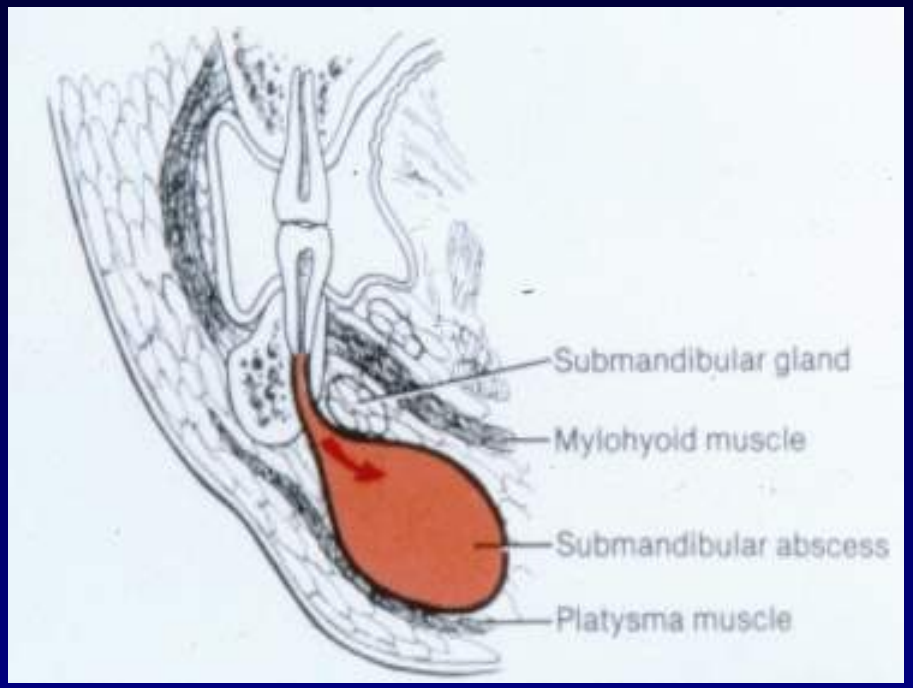
Progression of Odontogenic Infections





Progression of Odontogenic Infections





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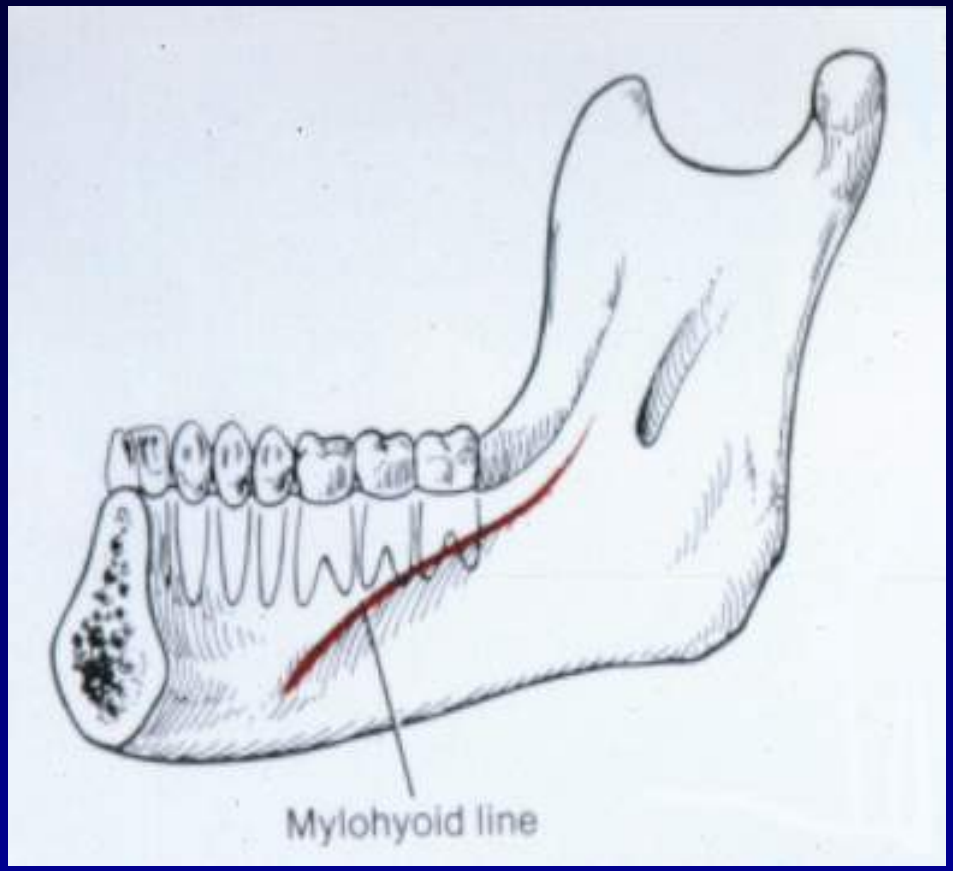


Principles of Treatment

- Determine the severity of the infection
- Complete history
- Physical examination
- State of the patients host defense
- Treat the infection surgically

Principles of Treatment

- Support the patient medically
- Choose and Rx the appropriate AB
- Re-evaluate the patient frequently
- Referral to OMS?

Severity of the Infection

- Complete History
  - Chief Complaint
  - Onset
  - Duration
  - Symptoms

Severity of the Infection

- How the patient feels- Malaise
- Previous treatment
- Self treatment
- Past Medical History

Physical Examination

- Vital Signs
  - Temperature- systemic involvement >101 F
  - Blood Pressure- mild elevation
  - Pulse- >100
  - Increased Respiratory Rate- normal 14-16

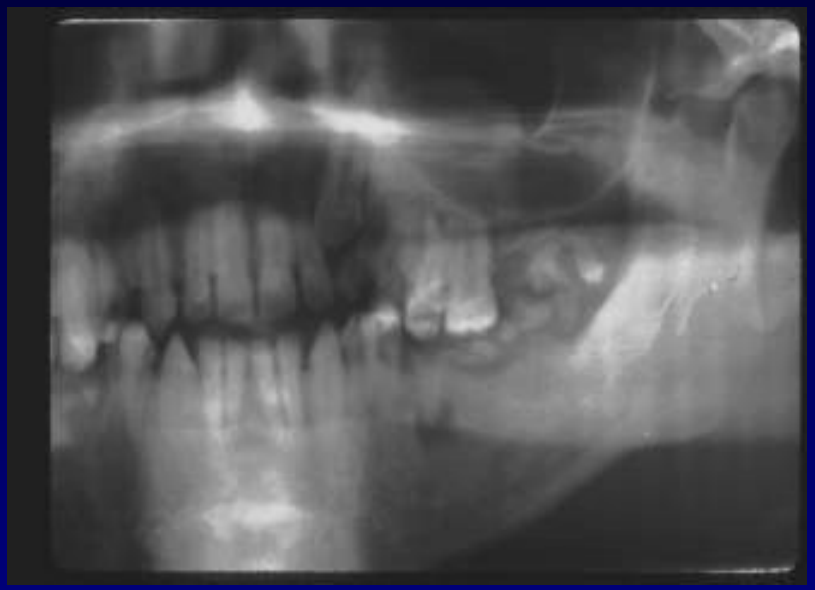
Physical Examination

- General appearance
- Palpate the area of swelling
  - Indurated- firm, hard
  - Fluctuant- fluid filled
  - Doughy- normal
- Intra-oral exam

Intraoral Exam

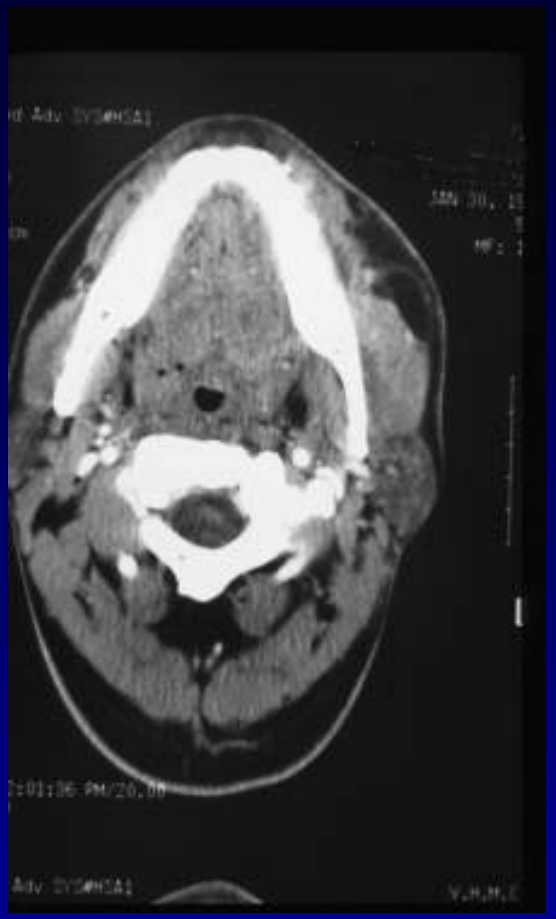
Radiographic Examination

- Panorex
- Plain Films
- CT
- MRI



Radiographic Examination-Plain Films

Radiographic Examination- CT



Host Defense Mechanisms

- Local defenses
  - Intact anatomic barrier
  - Indigenous bacteria
- Humoral defenses
  - Immunoglobulins
  - Complement
- Cellular defenses
  - Phagocytes
  - Lymphocytes

Medically Compromised Patients

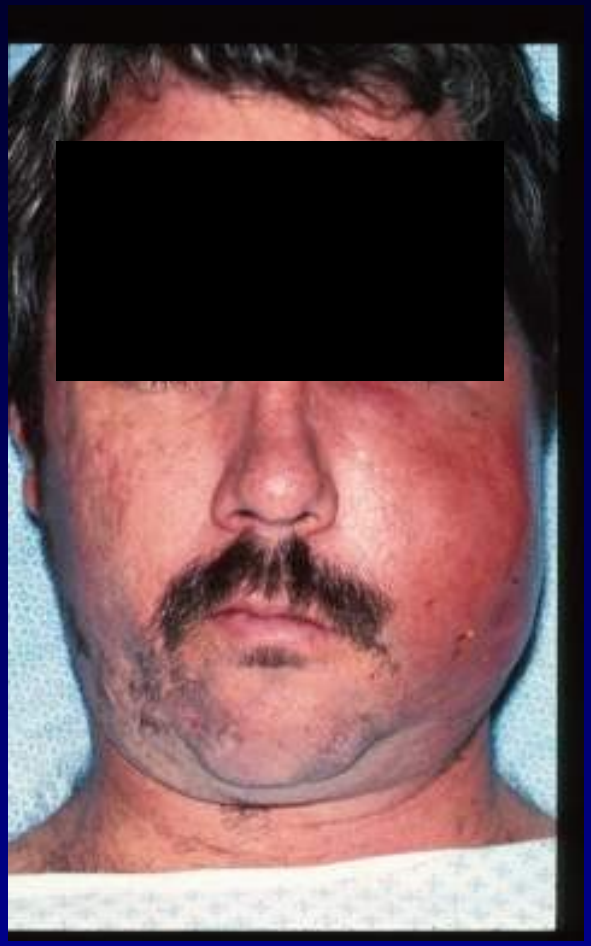
- Uncontrolled metabolic diseases
  - Alcoholism
  - Malnutrition
  - Diabetes
- Suppressing diseases
  - Leukemia
  - Lymphoma
  - Malignant Tumors

Medically Compromised Patients

- Suppressing drugs
  - Chemotherapeutic agents
  - Immunosuppressives

Indications for Referral to OMS

- Rapidly progressing infection
- Difficulty in breathing
- Difficulty swallowing
- Fascial space involvement



Indications for Referral

- Elevated Temperature >101 F
- Severe trismus
- Toxic appearance
- Compromised host defenses

Signs of Inflammation

- Dolor- Pain
- Tumor- Swelling
- Calor- Warmth
- Rubor- Redness
- Loss of function
  - Trismus
  - Difficulty in breathing, swallowing, chewing

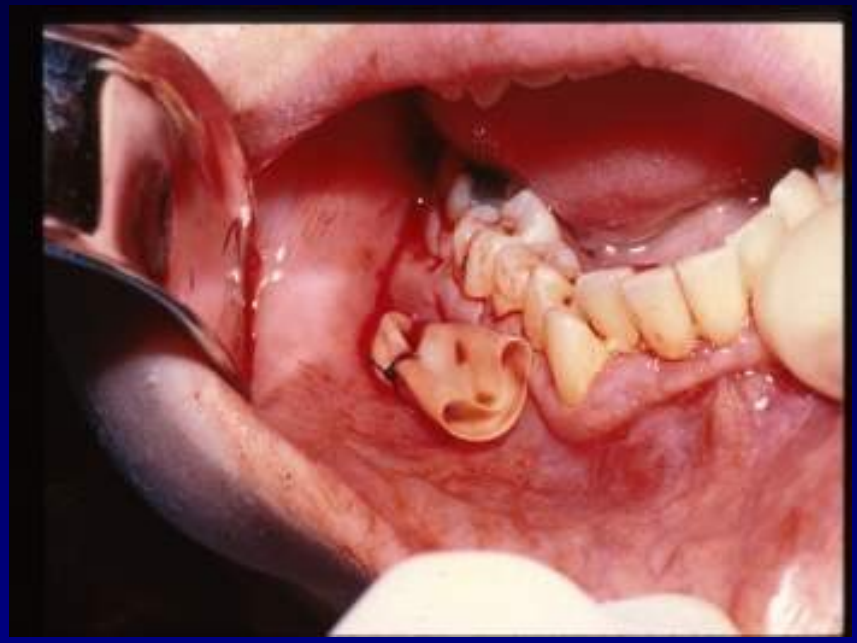
Surgical Treatment

- Provide drainage
- Remove the cause of infection
  - Pulpectomy
  - Extraction
  - Remove foreign body
  - Debride non-viable bone
- Culture and sensitivity

Surgical Treatment

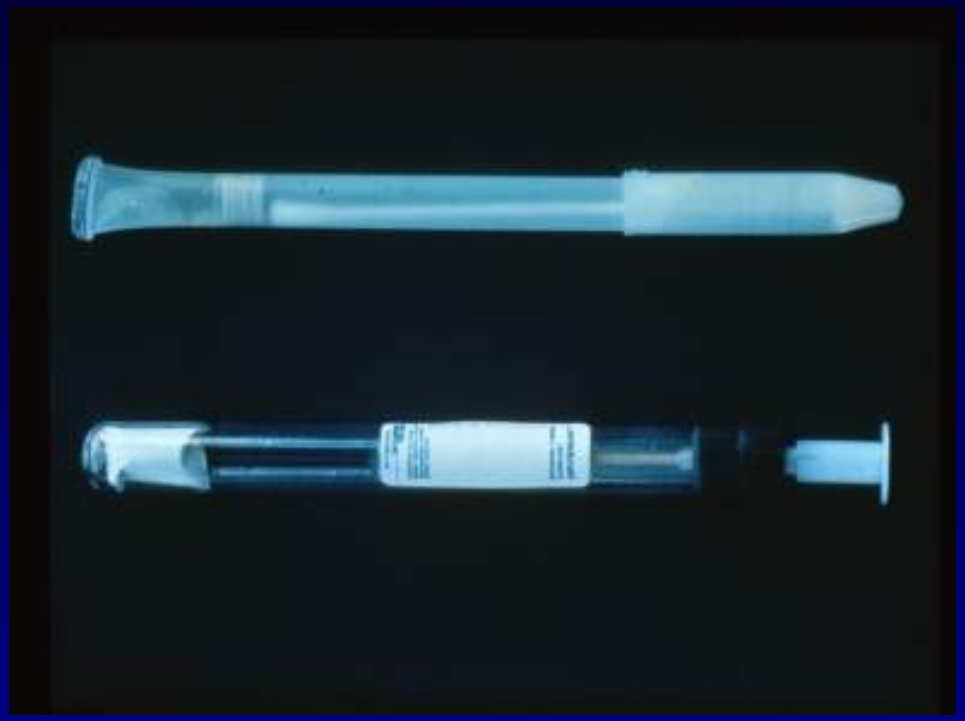
- Incision and drainage
  - Dependent site
  - Incision in healthy tissue
  - Adequate drainage
  - Exploration of all involved spaces
  - Irrigation

Surgical Treatment



Indications for Culture and Sensitivity Testing

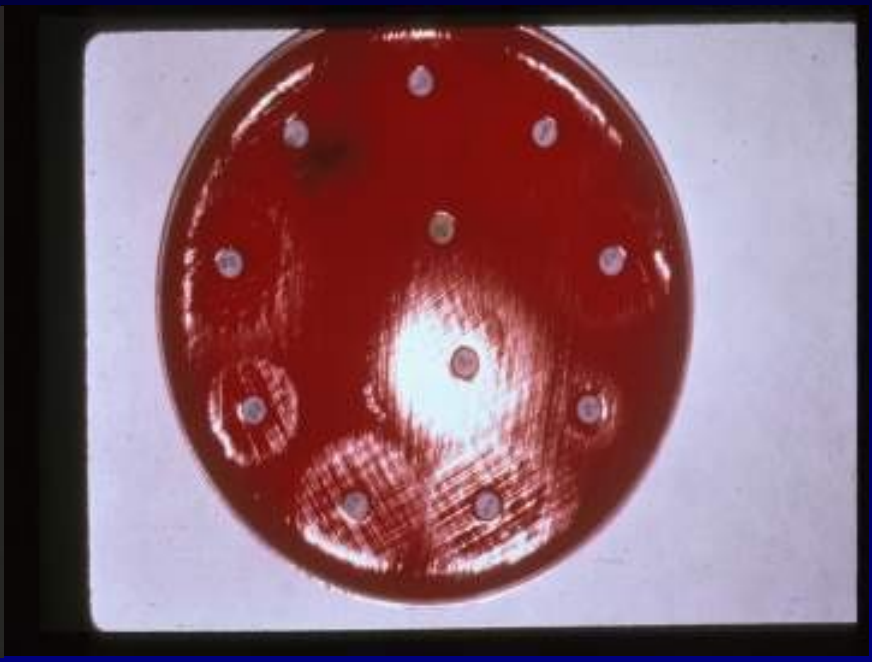
- Rapidly spreading infection
- Post-op infection
- Non-responsive infection
- Recurrent infection
- Compromised host defenses



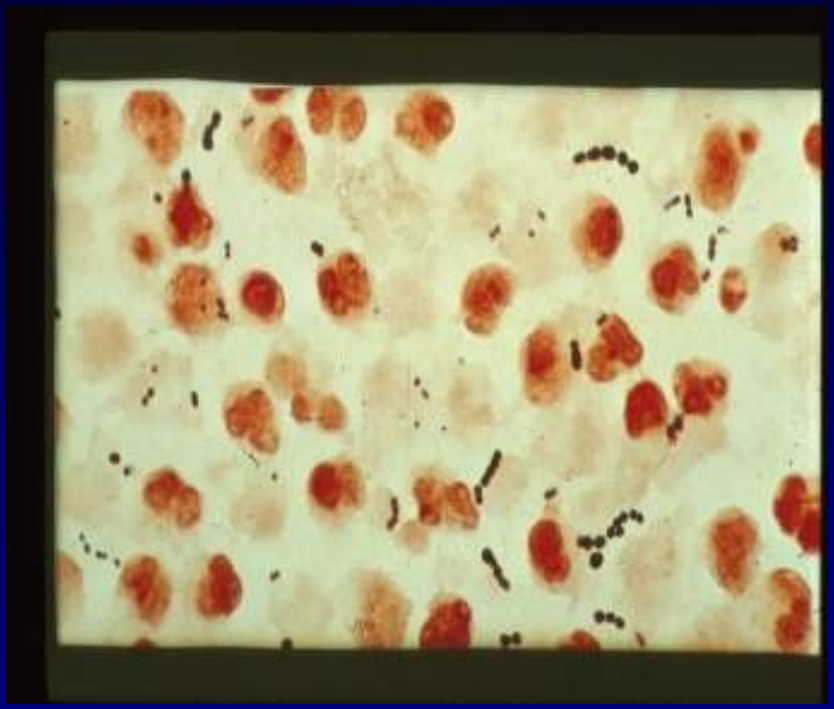
Microbiologic Considerations

- Identification of bacteria
  - Representative specimen collected
  - Examine specimen
  - Submit for culture and sensitivity
  - Gram Stain

Culture and Sensitivity

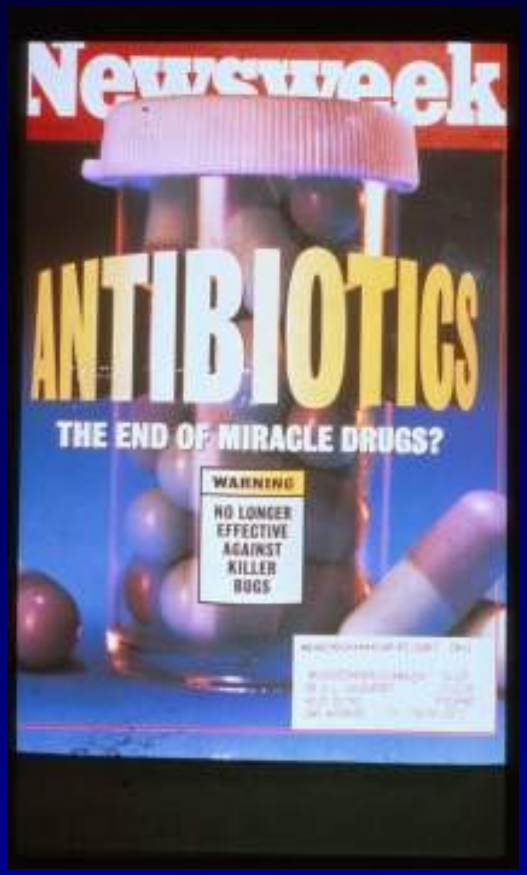


Gram Stain



Choosing the Appropriate Antibiotic

- Is an antibiotic necessary?
- Indications:
  - Acute onset infection
  - Diffuse swelling
  - Compromised host defenses
  - Involvement of fascial spaces
  - Severe pericoronitis

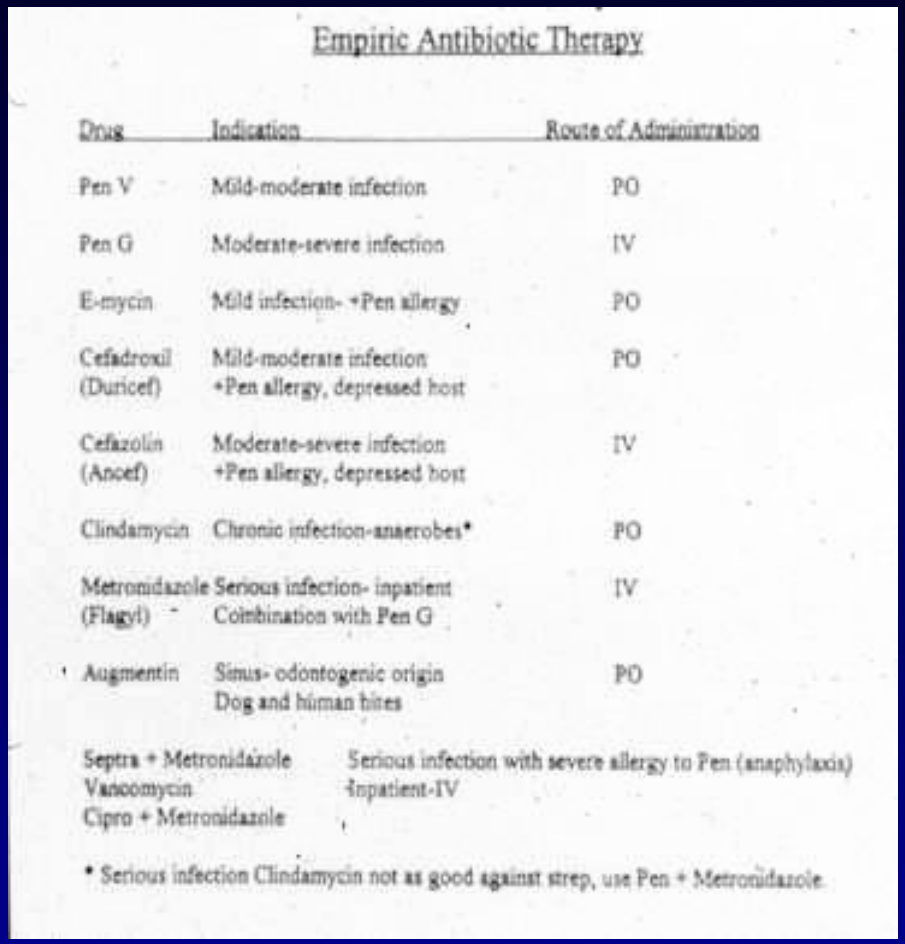


Principles of Antibiotic Therapy

- Use Empiric Therapy
- Use narrowest spectrum drug
- Use antibiotic with the lowest toxicity
- Use bactericidal antibiotic
- Be aware of Cost $$$

Principles of Antibiotic Therapy

- Administer the antibiotic properly
- Proper route of administration
- Proper dose
- Proper time interval
- Adequate period of administration



Empiric Antibiotic Therapy

Drug	Indication	Route of Administration
Pen V	Mild-moderate infection	PO
Pen G	Moderate-severe infection	IV
E-mycin	Mild infection- +Pen allergy	PO
Cefadroxil (Duricef)	Mild-moderate infection +Pen allergy, depressed host	PO
Cefazolin (Ancef)	Moderate-severe infection +Pen allergy, depressed host	IV
Clindamycin	Chronic infection-anaerobes*	PO
Metronidazole (Flagyl)	Serious infection- inpatient Combination with Pen G	IV
Augmentin	Sinus- odontogenic origin Dog and human bites	PO
Septra + Metronidazole Vancomycin Cipro + Metronidazole	Serious infection with severe allergy to Pen (anaphylaxis) Inpatient-IV	

* Serious infection Clindamycin not as good against strep, use Pen + Metronidazole

Antibiotic Cost Comparison

Drug	Dose	Cost for 10 days
Pen VK	QID	$1.20
E-mycin	QID	$3.20
Keflex	QID	$4.00
Duricef	BID	$37.80
Cipro	BID	$34.20

Antibiotic Compliance

- Dosage interval that encourages compliance

  QD or BID 70%

  QID 40%
- Non-compliant after start feeling better

  3-5 days 50%

  >7 days 20%

Support Patient Medically

- Fluids
- Nutrition
- Analgesics
- Consider need for insulin

Patient Monitoring

- Re-evaluate the patient frequently
- Response to treatment
  - Temperature
  - Swelling
  - How do you feel?
- Need for additional imaging?

Patient Monitoring

Development of an adverse reaction?

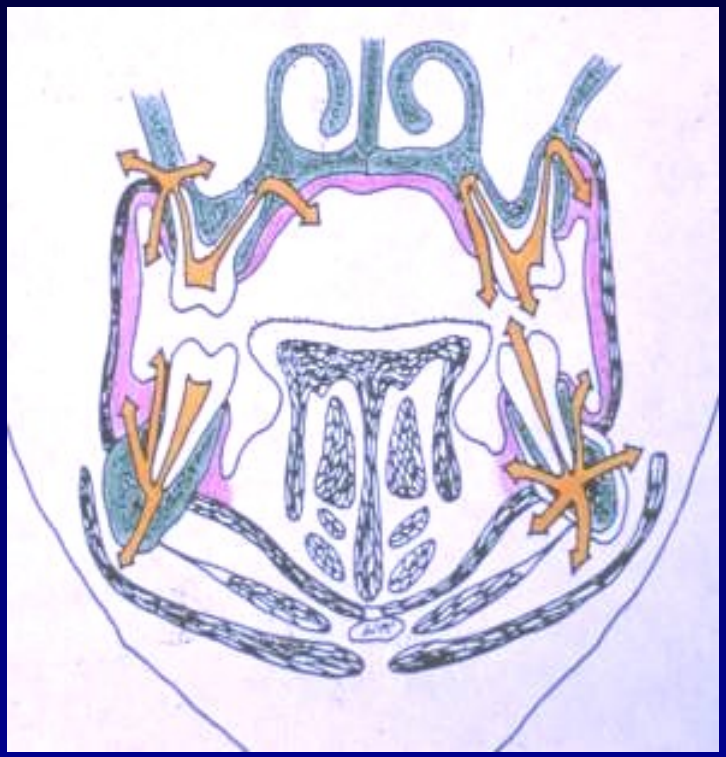
Antibiotic Associated Colitis

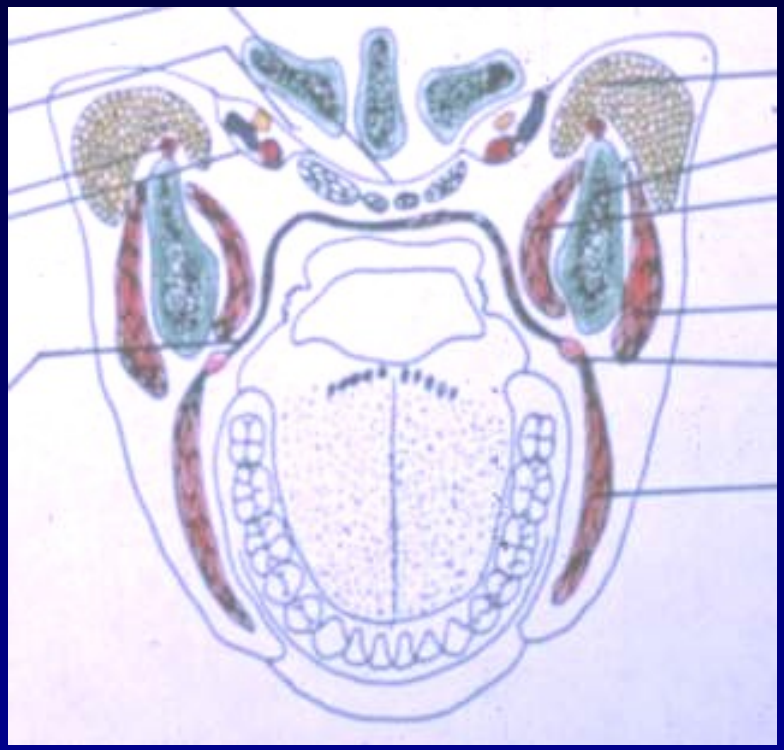
- Diagnosis
  - Profuse watery diarrhea >10 per day
  - Cramping
  - Fever
  - C. difficle culture and toxin assay
  - Tissue culture
- Treatment
  - D/C current AB
  - Fluid management
  - Antibiotics
    - » Metronidazole
    - » Vancomycin PO

Reasons for Treatment Failure

- Inadequate Surgery
- Depressed host responses
- Foreign body
- Antibiotic problems
  - Patient noncompliance
  - Drug not reaching the site
  - Drug dose too low
  - Wrong antibiotic

Fascial Space Infections

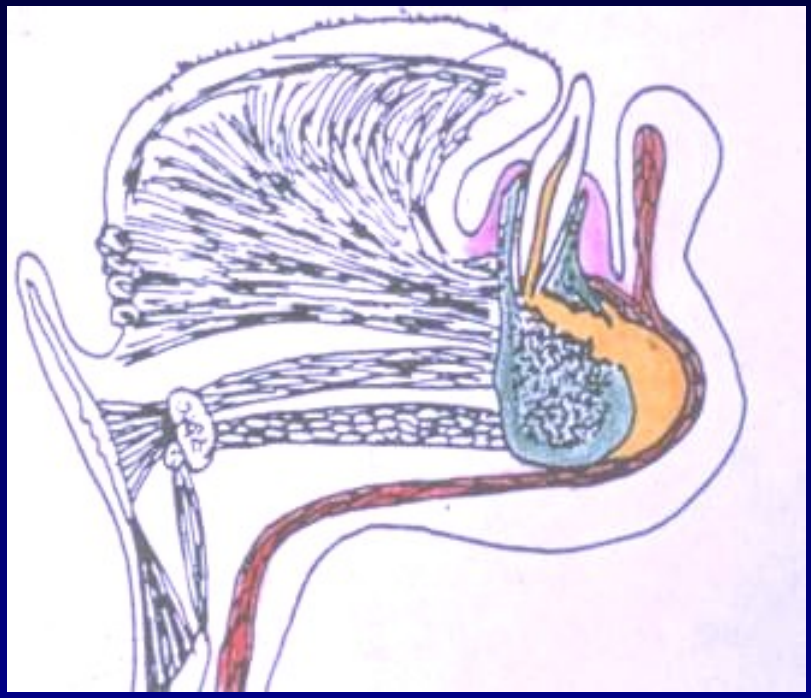




Mandibular Odontogenic Infections

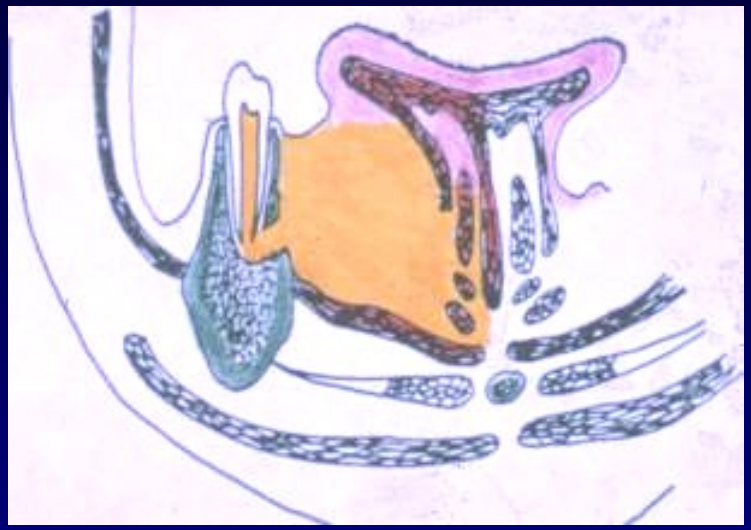
- Sublingual space
- Submental space
- Submandibular space
- Masticator space
- Lateral pharyngeal space
- Retropharyngeal space

Submental Space Infection

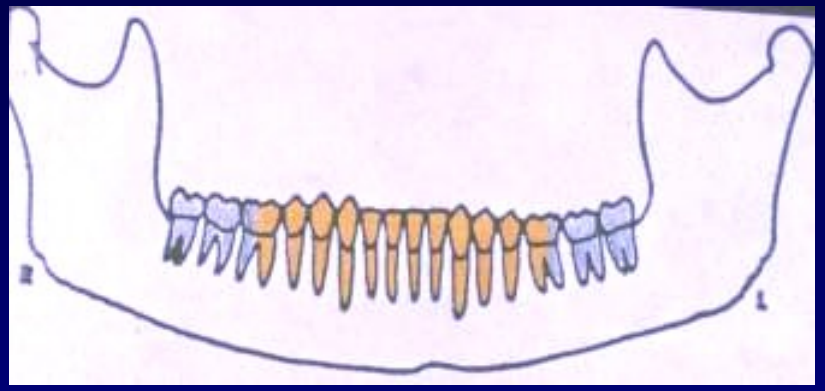


Submental Space Infection

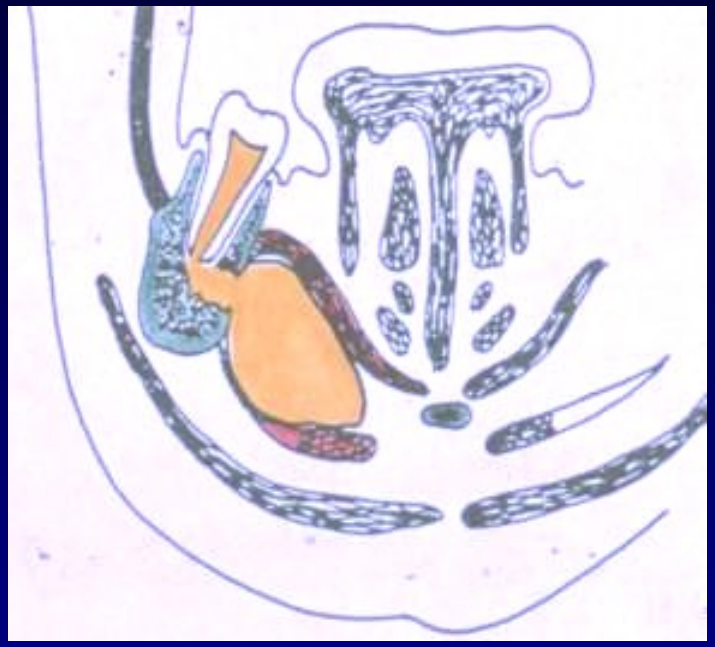
Sublingual Space Infection



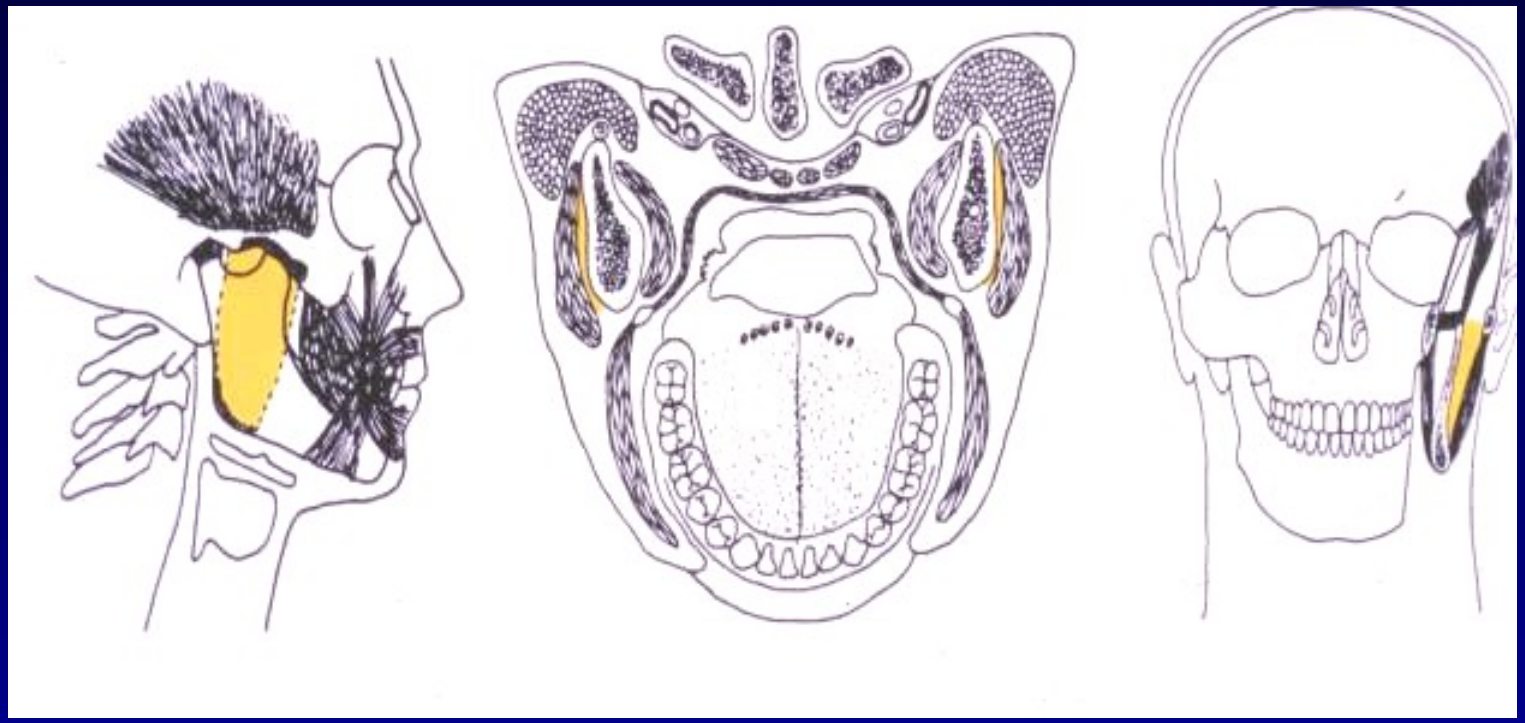
Sublingual Space Infection



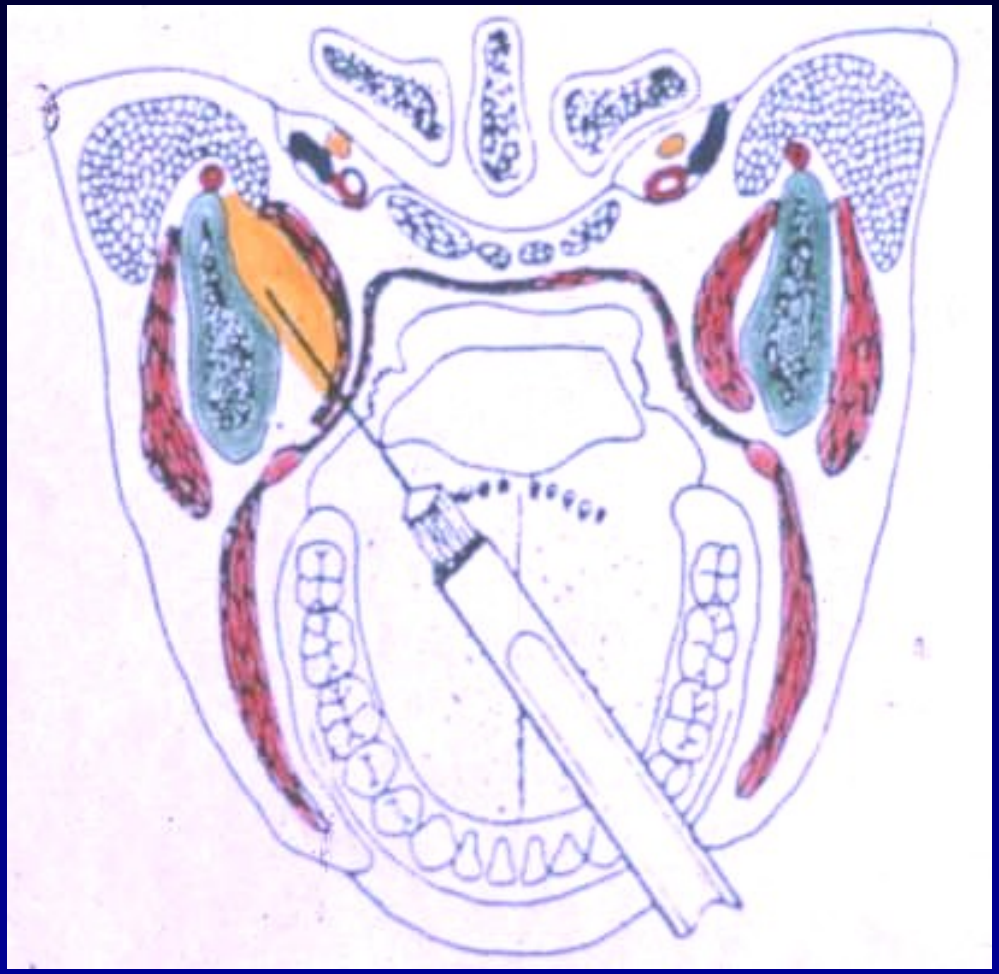
Submandibular Space Infection



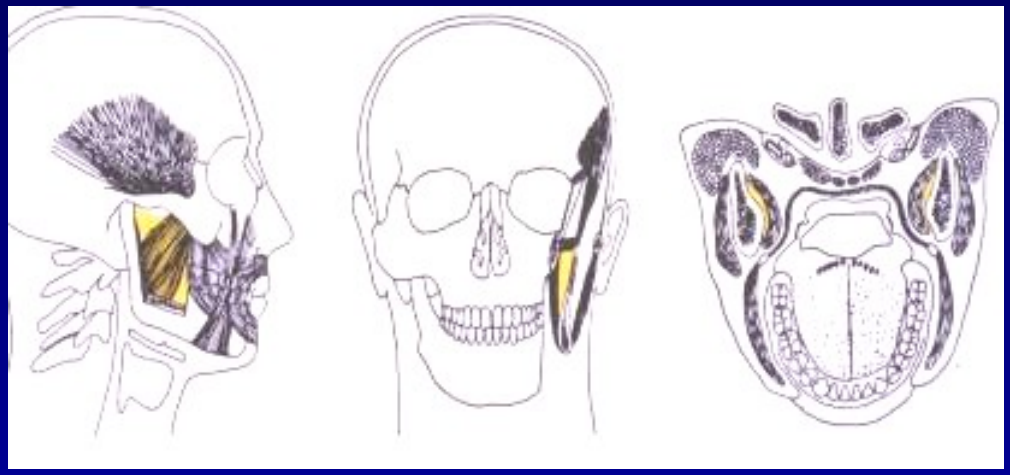
Masticator Space Infection



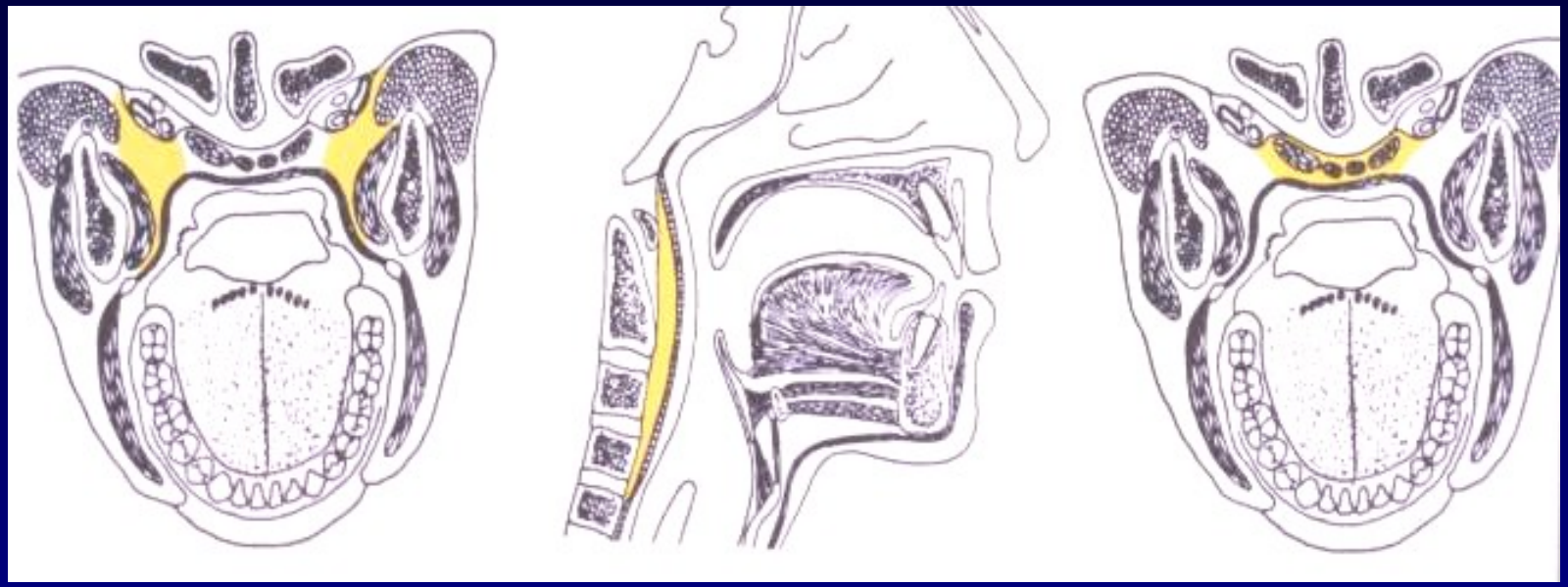
Masticator Space Infection



Lateral Pharyngeal Space



Retropharyngeal Space

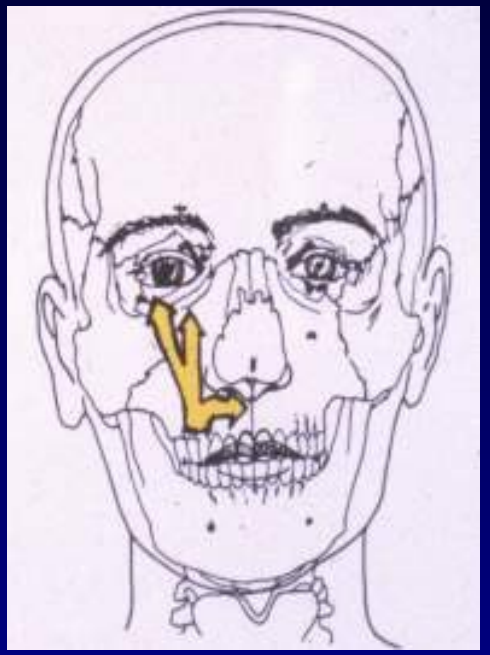


Ludwig's Angina

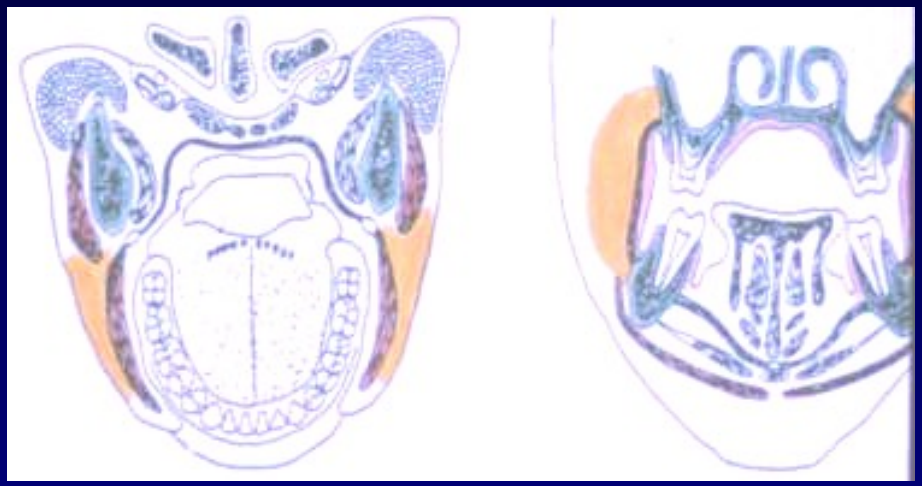
Maxillary Odontogenic Infections

- Canine space
- Infratemporal space
- Temporal space
- Buccal space

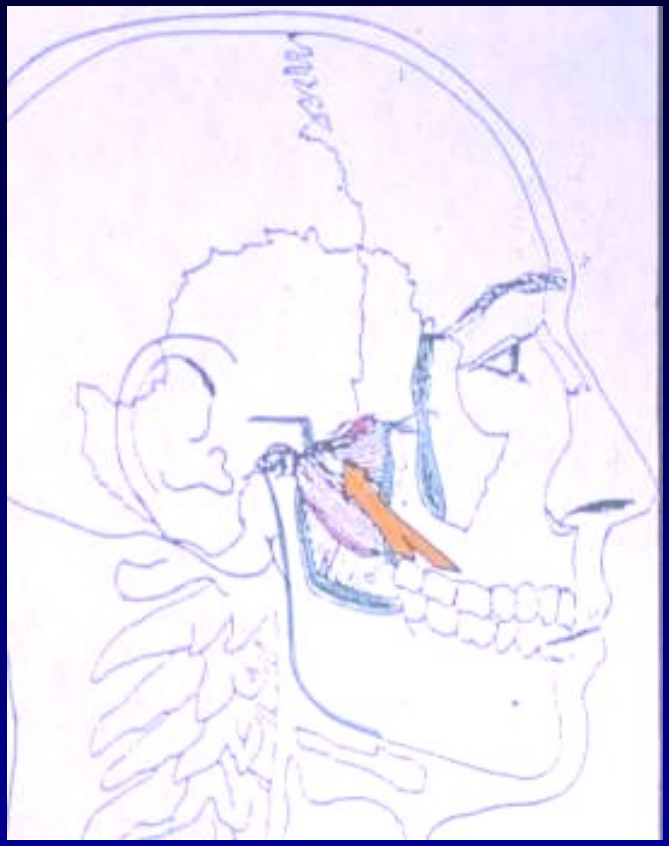
Canine Space Infection



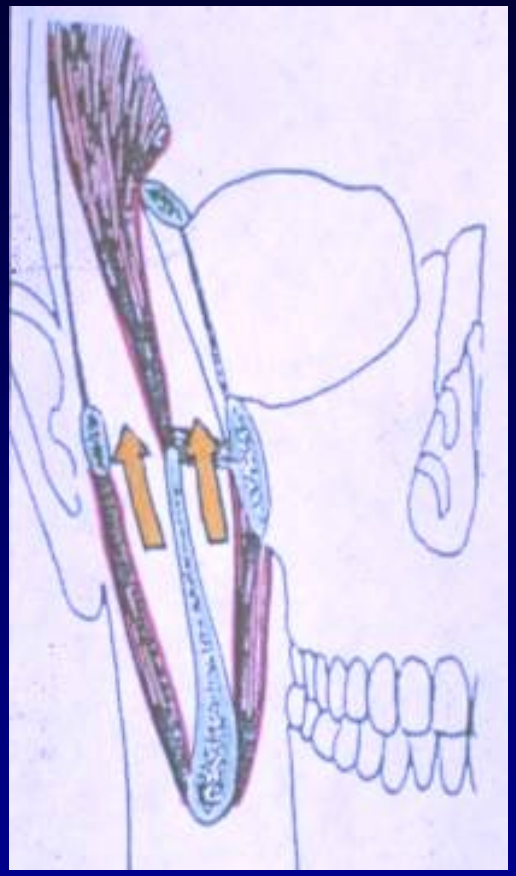
Buccal Space Infection



Temporal Space Infection



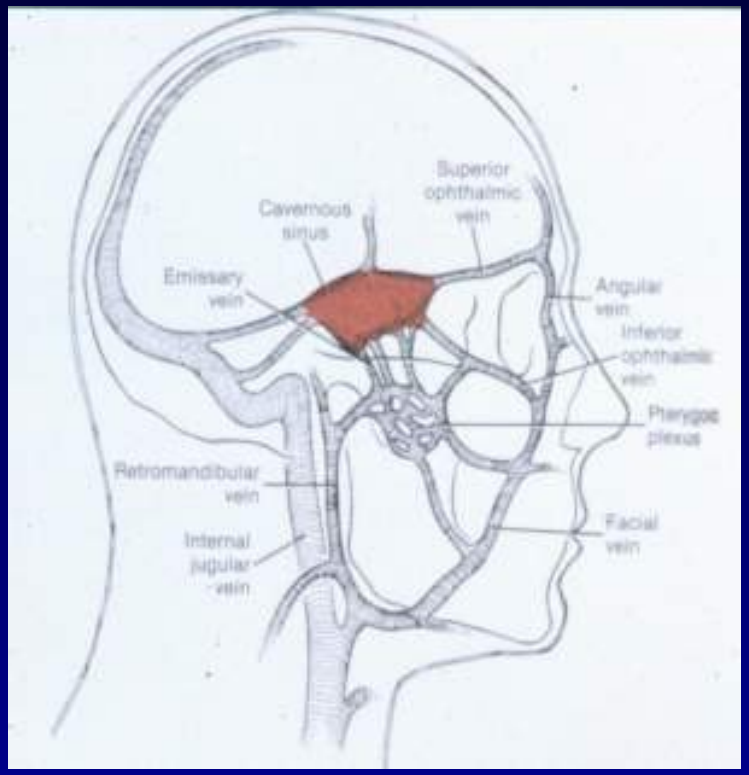
Temporal Space Infection



Head and Neck Infections

- Peritonsilar abcess
- Acute orbital cellulitis
- Cavernous sinus thrombosis
- Meningitis
- Necrotizing fascitis

Acute Orbital Cellulitis



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